

USSR

SOKOLOV, L. D. (Editor), et al., Mekhanicheskiye Svoystva Redkikh Metallov (Mechanical Properties of Rare Metals), Moscow, Izdatel'stvo Metallurgiya, 1972, 288 pp

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Graphite

USSR

UDC:539.4

UDOVSKIY, A. L. and GUSMAN, N. O., Moscow

"The Problem of the Temperature Dependence of Tensile Strength of Certain Carbon-Graphite Materials"

Kiev, Problemy Prochnosti, No 2, Feb 74, pp 41-45

Abstract: Analysis of experimental and theoretical data is used as a basis for the production of a model explaining the hardening of carbon-graphite materials with increasing test temperature. Dependences are produced which can be used to calculate the temperature curves of ultimate strength and arbitrary yield point in the area of the test temperature, where the value of yield point cannot be determined. It is determined that carbon-graphite materials differ from metallic materials only in the displacement of the temperature range in which intensive increase in the rupture viscosity is accompanied by a decrease in the arbitrary yield point in the area of higher test temperatures.

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GUSMAN, N. O.

RAV / X-760 / 5-MAY-73
X-760-12

$$Fo = \frac{q_0^2}{\lambda_{10}} \quad \text{or} \quad Fo = \frac{q_0^2 (T_0 - T_1)}{\lambda_{10}}$$

In the coefficient of temperature conductivity at $T_0 = 293^\circ \text{K}$, λ_{10} is the heating duration, and b is the temperature rise rate on the surface of the carrying portion) permits a relationship to be established between F_{O^*} and σ bend (the bending strength of the asbestoslike sheet). The required initial thickness of the protective covering can be determined using this relationship and taking the aerodynamic heating conditions into account.

Udovskiy, A. L., N. O. Gusman, and
V. N. Barabanov, Effect of test
temperature on the energy of destruction
of graphite. Problemy prochnosti, no. 5,
1972, 83-84.

To assess the effect of test temperature upon local characteristics of the energy of destruction, bending tests were conducted on specimens of fine-grain, homogeneous $8 \times 8 \times 40$ mm graphite. The elastic deformation energy release (the destruction ductility) was determined within the temperature range 20° to 2000°C . A lateral crack was simulated in each specimen by incision with a fret saw and tapering with a razor blade. The experiment was conducted on a test machine equipped with a low-lag resistance furnace. The high-temperature tests were conducted in an argon atmosphere. In the first stage of operation, at 20°C , the relationship of destruction ductility G to the relative incision size c/d was determined. More than 90 specimens were tested under conditions of

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UDC 577.1:615.7/9

GUSMAN, S. M.

"Chronic Occupational Benzene Intoxication"

Khronicheskaya professional'naya intoksikatsiya benzolom (cf. English above),
Baku, "Elm," 1970, 180 pp, ill., 1 r. 20 k. (from RZh-Biologicheskaya
Khimiya, No 22, 25 Nov 71, Abstract No 22F2041K by M. SH.)

Translation: The monograph considers data regarding the chemical properties
of benzene, spheres of application, and method of determination. Also
considered are data on the changes taking place during benzene poisoning
in blood morphology, bone marrow hematopoiesis, and the functional state of
the RES, as well as changes in vascular permeability and vitamin C metabolism.

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Acc. Nr:

AP0047250

G

Ref. Code: VRO504

PRIMARY SOURCE: Terapevticheskiy Arkhiv, 1970, Vol 42, Nr 1 ,
pp 46-48

INDICES OF EXTERNAL RESPIRATION IN ISCHEMIC DISEASE
OF THE HEART

S. M. Gusman, I. I. Mamedov

Summary

The authors conducted a complex investigation of the external respiration function in 32 patients with different forms of ischemic disease of the heart by means of a spirometabograph. The ventilation indices of the functional condition of the external respiration (respiratory volume, minute respiratory volume, maximum pulmonary ventilation) appeared to be mostly altered.

There was also seen a drop in the vital capacity of the lungs due to the decrease of the volume of its components. There was a tendency to a rise in oxygen consumption, though the coefficient of oxygen consumption remained within the norm.

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REEL/FRA
19790757

422

USSR

UDC 615.472:616.12-008.1-78

BELILOVSKIY, M. A., BERGER, I. I., FROLKIN, O. A., STETSIN, A. A., TROFIMOVA, G. N., and GUSMAN, V. Ye., All Union Scientific Research Institute for Medical Instrumentation, Moscow

"The Biopulse-2, an Apparatus for Auxiliary Blood Circulation"

Moscow, Meditsinskaya Tekhnika, No 4, 1971, pp 14-19

Abstract: The Biopulse-2 is an electromagnetic pump with bioelectric control designed to provide auxiliary blood circulation in different kinds of cardiac insufficiency in order to relieve the heart and increase the venous blood flow. The apparatus consists of a cardiac biopotential amplifier, control unit, power amplifier, motor with a pump, and power supply. The biopotential amplifier collects and processes biological information. The control unit regulates the pulsating current. The power amplifier boosts the pulsating current of low-power electrical energy while the electromagnetic motor with a diaphragm pump head transforms the electrical energy into mechanical energy to move the blood.

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USSR

UDC 542.91:542.978

ROZANTSEV, E. G., GRIGORYAN, G. L., GUSOVSKAYA, T. P., GODOVIKOV, N. N.,
AND TEPOV, N. YE., Institute of Chemical Physics, Academy of Sciences USSR
and Institute of Metallorganic Compounds, Academy of Sciences USSR

"Synthesis of Some Spin-labelled Inhibitors and Choline-esterase Substrate"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 71,
pp 2334-2336

Abstract: 1.2 g of 2,2,6,6-tetramethyl-4-chloroacetoxypiperidine-1-oxyl
(I) was dissolved in 8 ml ether, 0.75 g of dimethylaminomethylacetate was
added to it, and the reaction mixture was left standing for one day. The
solvent was evaporated yielding crystalline N,N'-dimethyl-N-acetoxymethyl-N-4-
(2,2,6,6-tetramethylpiperidin-1-oxyl)carboxymethylammonium chloride m.p.
163.5-165°. Addition of triethylamine to (I) under similar conditions gave
N,N,N,-triethyl-N-1-(2,2,6,6-tetramethylpiperidin-1-oxyl)carboxymethylammonium
chloride, m.p. 109-111°. A solution of 2 g of (I) in absolute ether was
added slowly with cooling and stirring to 1.55 g O-ethylethylchlorophosphonate
and 1.2 g triethylamine in absolute ether. After 24 hrs of standing the
reaction mixture was filtered, the solvent was evaporated and the product --
1/2

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USSR

ROZANTSEV, E. G., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 71, pp 2334-2336

O-ethyl-O-4-(2,2,6,6-tetramethylpiperidin-1-oxyl)methylphosphonate crystallized slowly from hexane. Analogously the O-p-nitrophenyl-O-4-(2,2,6,6-tetramethylpiperidin-1-oxyl)methylphosphonate was obtained from O-p-nitrophenylmethylchlorophosphonate, triethylamine and (I).

2/2

USSR

UDC 621.314.58 (098.8)

VULIS, M.L., ZAGORSKIY, A.YE., FURMAN, V.B., CHELNOKOV, R.S., GUSOVSKIY, V.V.
[Vsee. n.-i. i proyektiro-tekhnol. in-t kran i tyag elektrooborud. -- All-Union
Scientific-Research Design And Planning Technological Institute Of Crane And
Haulage Electrical Equipment]

"Static Frequency Converter With Direct Coupling"

USSR Author's Certificate No 256054, filed 23 Sept 68, published 8 Apr 70 (from
RZh--Elektronika i yeye primeneniya, No 11, November 1970, Abstract No 11B458P)

Translation: The invention pertains to a frequency converter with direct coupling,
accomplished by a bridge circuit using thyristors. With the object of eliminating
the third and multiples of three harmonics in the output voltage of the converter,
it is proposed to provide the converter with a choke coil with a ferromagnetic
core, three identical windings of which are connected series--cumulatively [--soglasno]
at each of the output phases of the converter. 1 ill. I.R.

1/1

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Pathology

USSR

UDC 616.988.25-092.9-091

GUSOVSKIY, Ya. M., KLISENKO, G. A., and GAYDAMOVICH, S. Ya, Institute of Infectious Diseases, Ministry of Health Ukrainian SSR, Kiev, and the Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Morphological Changes in Experimental Infections With the Sumakh Virus (Uukuniyemi Influenza)"

Moscow, Voprosy Virusologii, No 2, 1973, pp 167-171

Abstract: This communication consists of the first pathomorphologic description of mice infected with the Sumakh virus. Infections were induced in 1-2 and 6-7 day-old mice by intracerebral injection of a brain suspension containing a 100 LD₅₀ dose of the virus, strain 540, isolated in Azerbaydzhan in 1968. Prior to injection, the suspension was filtered through a 220 nm pore size Millipore filter to exclude bacterial infection. Control animals received a similarly treated suspension of a normal brain. Histologic sections were obtained daily, commencing with the 3rd post-infection day (prior to the appearance of clinical symptoms), fixed in 10% formalin, and stained with hematoxylin-eosin and thionine by the method of Hissl. Histologic evaluation showed that prior to the development of clinical signs, encephalitis had already developed by the 3rd day with primary inflammation of the dorsal regions of the subcortical ganglia (optic thalamus), gray matter of the horn of Ammon, and the ventral sections of the

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USSR

GUSOVSKIY, Ya. M., Voprosy Virusologii, No 2, 1973, pp 167-171

brain stem. The cells showed partial destruction or complete karyolysis. Infiltration of the affected parenchyma consisted primarily of segmented leukocytes, with some lymphocytes and an occasional histiocyte. Later, an inflammatory vascular reaction occurred which was fairly limited. With the passage of time new regions became involved, but the histotopographic distribution of the lesions remained the same. On the 4th day there was evidence of phagocytosis, accelerated lymphocyte infiltration, and more discrete glial hyperplasia. On the 6-7th day, the infiltrate consisted predominantly of lymphocytes, along with a small number of monocytes, histiocytes, and glial elements. Leptomeningitis developed in each of the infected animals with localization of the inflammatory infiltrates in the sulci. Leptomeningitis in the control mice was apparently due to injection of the brain suspension and the attendant trauma, and parenchymal cells at some distance from the inflammatory foci were seen to undergo dystrophic changes, from tigrolysis to frank lysis, while glial reaction was limited to irregular hyperplasia in the white and gray matter. In the experimental animals the inflammatory changes in the 1-2 and the 6-7 day old mice (at the time of injection) were comparable, with the older animals only showing a tendency for earlier localization of the lesions. In addition, the experimental animals showed productive focal inflammation and

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USSR

GUSOVSKIY, Ya. M., Voprosy Virusologii, No 2, 1973, pp 167-171

dystrophic changes in the skeletal muscles, while no such changes were observed in the control mice. Lesions of the internal organs were noncontributory in that they did not differ from those commonly encountered in other infections or intoxications. In terms of the morphologic picture, Sumakh virus encephalitis may be characterized as a selective, acute, primary poliomyelitis.

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USSR

UDC 662.61:621.43.019.2

GUSSAK, L. A.

"On the Prechamber-Flare Initiation of Avalanche Activation of the Combustion Process"

Moscow, Goreniye i vzryv -- sb. (Combustion and Detonation -- Collection of Works), Nauka Publishing House, 1972, pp 401-408 (from Referativnyy Zhurnal -- Teploenergetika, No 3, 1973, Abstract No 3T70)

Translation: The author attempts to explain the prechamber-flare method of initiating avalanche activation of the combustion process for various fuel mixtures. His explanation is based on the branched chain reaction mechanism. This method completely eliminates, for all practical purposes, the autocatalytic, slow, incomplete and unstable development of chemical reactions and excludes the possibility of degenerate branching of the chains. This causes a considerable shortening of the delay period and a lowering of the ignition temperature, as well as an increase in the speed and completeness of the combustion process. (7 illustrations; 6 bibliog. ref.)

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USSR

UDC 629.7.036.3:536.46

GUSSAK, L. A., SAMOYLOV, I. B., SEMENOV, YE. S., MURASHEV, A. F., OZEROV, YE. A., and STOTLAND, A. I.

"The Concluding Stage of the Turbulent Combustion of a Heterogeneous Mixture"

Moscow, Gorennye i Vzryv--Sbornik (Combustion and Explosion--Collection of Works), Nauka, 1972, pp 365-369 (from Referativnyy Zhurnal--Aviatsionnyye i Raketnyye Dvigateli, No 2, 1973, Abstract No 2.34.30. Resume)

Translation: This paper investigates a subsonic stream of gases in the nozzle zone of a model gas-turbine engine combustion chamber at temperatures from 700 to 1000°C. It is shown that the gas stream is not an equilibrium one, and consequently the thermodynamic approach may prove insufficient for determining the properties of such a stream. The work was conducted on an experimental combustion chamber in which diesel fuel was burned. The nonequilibrium state of the combustion products was established on the basis of ionization data of the gases and on the basis of their luminescence spectra. The mean temperature was simultaneously measured by thermocouples, and the composition of the gas-stream combustion products was determined. The obtained data permit the conclusion to be drawn that at regimes of 700 and 800°C, slow volume reactions of hydrocarbon burnout take place. The considerably large in-equilibrium observed at regimes of 900 and 1000°C is caused mainly by removal of the

USSR

GUSSAK, L. A., Goreniye i Vzryv--Sbornik, Nauka, 1972, pp 365-369

flame foci from the primary zone of the combustion chamber and, partially, by afterburning reactions within the volume. An attempt is made at an experimental justification of a possible mechanism which leads to the appearance of foci with a slow volume reaction. 2 figures. 7 references.

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Adsorption

UDC: 542.8

USSR

SVETTSOV, V.I., MAKSHOV, A.I., GUSTERIN, V.P., Ivanovo Chemical Technological Institute, Ivanovo, Ministry of Higher and Secondary Specialized Education RSFSR

"Decay and Absorption of Carbon Monoxide in a Glow Discharge and in a High-Frequency Discharge"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 3, Mar 70, pp 814-816

Abstract: The authors studied the decay of carbon monoxide and its absorption by the walls of the discharge tube in a glow discharge and in a high-frequency discharge under various conditions. The absorption of the gas in the discharge determined by the rate of formation of active particles in the volume accompanying electron collisions. The difference in the shape of the absorption curves in high-frequency and glow discharges is due to the contribution of cathode vaporization to absorption in the latter case. The observed relationship between the rate of absorption and the rate of vaporization can be attributed to a physical adsorption process.

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USSR

UDC: 517.934.1

GERSHCENKO, Ye. I., and GUSTOMESOV, V. A. (Sverdlovsk Department of the Steklov Mathematical Institute)

"Analysis of a Discrete Relay System on a Phase Plane"

Minsk, Differentsial'nyye Uravneniye (Differential Equations), Vol 6, No 9, September 1970, pp 1587-1598

Abstract: The phase-plane method is used to investigate a second-order relay system having a piecewise constant control varying at discrete equal time intervals. Qualitatively, the mapping point appears initially in the neighborhood of the coordinate origin, where complex multifrequency (periodic or aperiodic) motion becomes established. The author examines the switching region and simple limit cycles. Switching occurs within a defined region described by self-similar parabolic segments. The system is described within a coordinate system in which the trajectories in the 2nd and 4th quadrants are mapped onto each other according to the Cauchy equation. The possible motions of the mapping point are illustrated and discussed in detail, as are the steady-state motions of the system. Orig. art. has 4 figures and 2 references.

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1/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--PREPARATION AND PROPERTIES OF AQUEOUS BUTYL RUBBER DISPERSIONS -U-
AUTHOR--(05)-GUSTOVA, L.P., GELLER, T.L., MAZINA, G.R., SANDOMIRSKIY, D.M.,
DOGADKIN, B.A.
COUNTRY OF INFO--USSR
SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 203-206
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--BUTYL RUBBER, EMULSION, PARTICLE SIZE, POLYMER FILM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1993/0400 STEP NO--UR/0069/70/032/002/0203/0206
CIRC ACCESSION NO--AP0113318
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0113318

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE CONDITIONS OF PREPARATION OF BUTYL RUBBER DISPERSIONS BY MILLING HAVE BEEN STUDIED. GREATER RIGIDITY OF POLYMER OR ITS MIXTURES FAVORS DISPERSION. THE COLLOID CHEMICAL PROPERTIES OF DISPERSIONS PREPARED WITH VARIOUS EMULSIFIERS HAVE BEEN EXAMINED. THE SMALLEST PARTICLE SIZE WAS OBTAINED WHEN DISPROPORTIONATED ROSIN WAS USED AS EMULSIFIER. IT HAS BEEN PROVED POSSIBLE TO OBTAIN FILMS FROM BUTYL RUBBER DISPERSIONS. THE PROPERTIES OF THESE FILMS HAVE BEEN ASSESSED. DECREASE IN THE AMOUNT OF EMULSIFIER DURING DISPERSION OR DUE TO SETTLING OF DISPERSIONS SUBSTANTIALLY INCREASES THE FILM STRENGTH.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--PROTON POLARIZATION IN ELASTIC AND INELASTIC SCATTERING OF
MAGNESIUM 25 AT E SUBP EQUALS 6.08 MEV -U-
AUTHOR--(05)-CHUBINSKIY, O.V., KUZMITSKIY, I.V., VAGANOV, P.A., GUSTOVA,
L.V., GUSHCHIN, V.N.
COUNTRY OF INFO--USSR
SOURCE--YAD. FIZ. 1970, 11(1), 29-32
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--ELASTIC SCATTERING, INELASTIC SCATTERING, PROTON POLARIZATION,
MAGNESIUM ISOTOPE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1980/0174 STEP NO--UR/0367/70/011/001/0029/0032
CIRC ACCESSION NO--AP0048466
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0048466

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POLARIZATION ANGULAR DISTRIBUTION OF 6.08-MEV P ELASTICALLY SCATTERED ON PRIME25 MG WAS MEASURED AT 30-150DEGREES IN THE LAB. SYSTEM BY USING THE DOUBLE SCATTERING METHOD. THE 1ST TARGET WAS 2-MG-CM PRIME2 SELF SUPPORTING METALLIC MG FOIL, ENRICHED WITH PRIME25 MG UP TO 92PERCENT, THE 2ND ONE WAS 8-MG-CM PRIME2 GRAPHITE PLATE. THE SCATTERED P WERE REGISTERED WITH A TELESCOPE DETECTOR, CONSISTING OF A PROPORTIONAL COUNTER AND OF A SI-LI DETECTOR, PLACED INSIDE THE PROPORTIONAL COUNTER. THE P BEAM THROUGH MG TARGET WAS 5-6 MUA. THE INSTRUMENT ASYMMETRY WERE MEASURED WITH 11 MG-CM PRIME2 AU FOIL. THE EXPTL. RESULTS ARE COMPARED IN A GRAPH WITH THE CALCNS. BY MEANS OF THE OPTICAL MODEL. THE VALUES OF THE POLARIZATION OF INELASTICALLY SCATTERED P CORRESPONDING TO THE STATES 1.614 MEV (SEVEN HALVES PLUS) AND 1.960 MEV (THREE HALVES PLUS) WERE OBTAINED AT 60, 70, 80, 90, 100, AND 140DEGREES. FACILITY: LENINGRAD. GOS. UNIV., LENINGRAD, USSR.

UNCLASSIFIED

USSR

CHUBINSKIY, O. V., VAGANOV, P. A., GUSTOVA, I. V., GUSHCHIN, V. N., KUZ'MITSKIY, I. V., SEREBROV, A. P., Leningrad State University

"Proton Polarization in Elastic and Inelastic Scattering by Mg-25 at $E_p = 6.08$ Mev"

Moscow, Yadernaya Fizika, Vol 11, No 1, 1970, pp 29-32

Abstract: Continuing their study of proton polarization in elastic and inelastic scattering by magnesium isotopes, the authors describe results of measurements of the angular dependence of the polarization of 6.08 Mev protons in elastic scattering on Mg-25 in an angle range of from 30° to 150° (laboratory system). This is the first time that results have been obtained for the proton energy range considered. The double scattering method was used for the measurements. At certain angles ($\theta = 60^\circ, 70^\circ, 80^\circ, 90^\circ, 100^\circ, \text{ and } 140^\circ$) it was possible to obtain the value of the polarization of inelastically scattered protons corresponding to the states 1.614 Mev ($7/2^+$) and 1.960 Mev ($5/2^+$). Since in future the authors intend to make a combined analysis of the data obtained by them on the polarization of 6-Mev protons in elastic and inelastic scattering by the isotopes Mg-24, Mg-25, and Mg-26, including the results of

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USSR

CHUBINSKIY, O. V., et al., Yadernaya Fizika, Vol 11, No 1, 1970, pp 29-32

recent measurements of variation with energy of proton polarization in scattering by Mg-24, the present article is limited to a comparison of experimental results for Mg-25 with calculations according to the optical method.

The authors thank the operations group of the Cyclotron Laboratory of the Scientific Research Institute of Physics, Leningrad State University.

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UDC 621.382.2

USSR

GUSYATIKER, M.S.

"Concerning Some Parameters Of Microwave Band Junction Diodes"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works), No 23, Moscow, "Sov. radio," 1970, pp 238-245 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B96)

Translation: The dependence is considered of the resistance losses and the values of the dissipated power, on the configuration of the crystal of a junction diode operating in the microwave band. The conclusions can be applied to the study of varactors, p-i-n diodes, etc. The characteristics of the flow of microwave current in a junction diode operating in the microwave band are considered. It is shown that as a result of the skin effect the parameters of the diode structure (resistance losses and heat release) strongly depend on the configuration of the semiconductor crystal. Best results can be obtained on a crystal which has the form of a circular cylinder. A tetragonal crystal is considered as an example of a more complex configuration, and it is shown that the parameters of a semiconductor diode with such a crystal are considerably worse than with the circular. 7 ill. 2 ref. Summary.

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USSR

UDC: 621.382.2

GUSYATINER, M. S.

"Criteria of Semiconductor Diode Quality in Frequency Conversion"

Moscow, Radiotekhnika, Vol. 25, No. 10, 1970, pp 69-72

Abstract: Plane semiconductor diodes used in uhf circuitry as parametric amplifiers or harmonic oscillators are assigned quality criteria of the form $r_g C$, where r_g is the resistance in series with C , the charge capacitance of the p-n junction. The purpose of this paper is to find the parameters characterizing the quality criterion of a diode in harmonic oscillator circuits and mixers, when the diode operates in the low-level injection mode with a nonlinear conductance as the active element. It is found that for the harmonic oscillator, the values of r_g and f_k , where f_k is the critical frequency, limit the maximum power of the N-th harmonic. It is these values, then, that determine the quality of the diode in this type of circuit. For the diode used as mixer, the parameter characterizing the quality criterion is f_k alone. It is assumed in the calculations that the average lifetime of the minor current carriers in the diode base is much larger than the period of the signal. In practice, however, this is not a rigorous condition.

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USSR

JED 621.396.4

GUSYATINSKIY, I.A.

"Effects Of Parasitic AM On Noise Level In Channels Of A Tropospheric Line With FM"

Elektrosvyaz', No 7, July 1972, pp 39-47

Abstract: Many previous calculations of the noise level in the channels of a tropospheric line with FM did not take into account an important circumstance, i.e., the increase of thermal noise at the output of the receiver during modulation of the transmitter. In the present paper formulas are derived for calculation of the thermal noise level in the tone-frequency channel of a tropospheric line with frequency multiplexing and FM, taking account of parasitic AM originating because of multiple-wave propagation of the radio waves. An experimental test of the theoretical results was conducted on a segment of the tropospheric line. The results of the test agree with theory. It is noted that parasitic AM on tropospheric lines not only causes an increase of the thermal noise level but also the appearance of transient noise because of imperfection of the limiters. Formulas for calculation of this transient noise are presented in a 1968 work of which Gasyatinskiy is a coauthor. 7 fig. 4 ref. Received by editors 8 Oct 1971.
1/1

USSR

UDC: 621.396.2:551.510.52

BERNOSKUNI, Yu. V., VAYZBURG, G. M., GUSYATINSKIY, I. A., KOZLOV, V. V.,
NEMIROVSKIY, A. S., PLEKHANOV, V. V.

"Experimental Research on a New Method of Combatting Signal Fading on
Long-Range Tropospheric Transmission Lines ('Accord')"

Tr. NII radio (Works of the Scientific Research Institute of Radio), 1972,
No 1, pp 55-62 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8A342)

Translation: The paper presents the results of experimental studies of
the "Accord" system on a long-range ultrashort-wave tropospheric trans-
mission line. The gain over standard quadrupled reception is determined.
Resumé.

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USSR

UDC: 681.3:519.2

GUT, R. E.

"A Device for Computing an Instantaneous Average Value"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331397, Division G, filed 27 Jul 70, published 7 Mar 72, p 155

Translation: This Author's Certificate introduces a device for computing an instantaneous average value. The device contains a functional converter, which is connected to a multiplier, and also an integrator. As a distinguishing feature of the patent, computing accuracy is improved by adding a subtracter with one input connected to the input of the device, the other input connected to the output of the integrator and the output of the device, and the output of the subtracter connected through the multiplier to the input of the integrator.

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USSR

UDC 621.374.32

GUT, R. E.

"A Reversible Binary-Decimal Counter"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 35, Soviet Patent No 287120, class 21, filed 14 Aug 68, published 19 Nov 70, p 64

Translation: This Author's Certificate introduces a reversible binary-decimal counter which contains four flip-flops with counting inputs, AND circuits, and a delay element. As a distinguishing feature of the patent, the circuit is simplified by connecting the ones state of the first flip-flop to the counting input of the fourth flip-flop through an AND circuit whose second input is connected to a "subtract" line, while the ones state of the fourth flip-flop is connected to the counting input of the third flip-flop, and through the delay element to the counting input of the second flip-flop.

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AA0044226

Gut, R.E

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 1/70

235106 PULSE COUNTER consists of:- potential triggers (1-4) with calculating inputs and pulse-potential coincidence schemes (5-12) (switches) Initially all triggers are in "0" state, switches (5,9,10 and 11) are in (-) state, all other switches are in (-) state.

To the even line is applied first pulse, which through open switch (5) brings trigger (1) into "1" state. At the same time switch (6) opens and switch (9) shuts. Into the counter is written the 1000 number. Incoming second pulse into the odd line passes through switch (6) to trigger (2) and brings it into "1" state. At the same time switch (7) opens and switch (10) shuts. Into the counter is written 1100. Fourth pulse passes through switch (9) and (7) and brings trigger (3) into "1" state. Switches (5) shuts and (8) opens.

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AA0044226

Fifth pulse through switch (8) brings trigger (4) into "1" state. Sixth pulse brings trigger (3) into "0" state, etc. A table shows the stage of all elements. Tenth, thirtieth pulses are passing through the switch (12), while twentieth, fortieth.. pulses are passing through the switch (11).

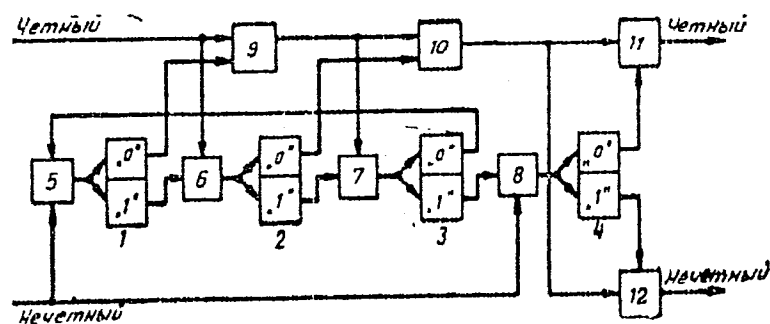
Each decade divides the pulses into even and odd series without additional trigger.

13.3.67 as 1141447/18-24 Add to 181398 R.E. GUT.
(6.6.1969) Bul 5/16.1.69. Class 2la¹. Int.Cl.H 03 k.

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Instruments and Equipment

USSR

GUTAN, L.

"A New Surgical Needle"

Moscow, Nauka i Zhizn', No 3, 71, p 74 -

Abstract: Candidate of Medical Sciences B. Ya. Daykhovskiy of Moscow City Clinical Hospital No 24 and S. G. Kosov, an engineer, have invented a new, atraumatic surgical needle that can be easily reloaded and reused many times (Author's Certificate No 233,161). It is made of stainless steel, from 0.5 to 1.5 millimeters in diameter, and can be straight or curved. The unique thing about the needle is how the thread is secured. The needle is hollow at the thread end. The thread is inserted into this groove and catches on a spring lock that is punched out of one wall of the tube. It is then held securely, and reloading during an operation is simple. The great advantage of the needle, in addition to easy operation, is that the thread does not extend beyond the diameter of the needle, thus avoiding damage to tissue surrounding the area being stitched. The article points out that this may be useful in other areas as well, such as the garment and footwear industries, and in domestic use. The needle has been tested (a total of 1,000 was manufactured by the Kuntsevskiy Platinum Needle Plant in

1/2

USSR

GUTAN, L., Nauka i Zhizn', No 3, 71, p 74

Youth International) at several scientific institutes and hospitals, and all results have been good. The needle has been patented in a number of foreign countries, including Italy, Japan, England, France, West Germany, Sweden, Switzerland, India, and Pakistan. The USSR Ministry of the Medical Industry has now decided to set up industrial production of the needle on an extensive scale.

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2/2

GUTCHIN, I. B.

COLEEN

105. USSR

UDC 611--018.8 : 51+519.95+519.92

GUTCHIN, I. B. and GRABOVSKIY, I. I.

SO: FOREIGN PRESS DIGEST
29 OCT 1991

"The Possibilities of Synthesizing Optimal Formal Neurons"

Kiberneticheskiye Aspekty v Izuchanii Raboty Mozga (Cybernetic Aspects of the Study of the Brain's Functioning), Moscow, Nauka Publishing House, 1970, pp 261-274

Abstract: Optimal neurons are understood to be formal neurons which have a minimum of fibers and at the same time a minimum of branches. Algorithms for synthesizing neurons with a minimum of fibers according to a given threshold diagram are known. The task of compiling a synthesis algorithm for a neuron with a minimum of branches is considered.

In the process of investigation it was established:

- 1) For a given threshold diagram, the number of neurons with a minimum of branches is substantially less than the number with a minimum of fibers;
- 2) For approximately $0.7 \div 0.9$ of the total number of threshold diagrams in question it is possible to construct one optimal formal neuron;

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29 Oct 71

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FED:CYBERNETICS

USSR

GUTCHIN, I. B., GRABOVSKIY, I. I., Kiberneticheskiye Aspekty v Izuchenii Raboty Mozgi, Nauka Publishing House, 1970, pp 261-274

3) Depending on the technical means used to implement the neurons, the neuron net may be constructed wholly from optimal neurons or partially from neurons that are minimal with respect to one of the parameters (the number of branches or the number of the neurons).

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6 Numerical Analysis

USSR

UDC 518(02)

GUTER, R. S., OVCHINSKIY, B. V.

"Elements of Numerical Analysis and Mathematical Treatment of Experimental Results"

Moscow, Elementy Chislennogo Analiza i Matematicheskoy Obrabotki
Resul'tatov Opyta (cf. English above), 2nd ed., revised, textbook
for students in higher technical educational institutions, "Nauka,"
1970, 432 pp, ill., 79 kopecks (from RZh-Matematika, No 9, Sep 1970,
Abstract No 9B551 K, by I. Shelikhova)

Translation: The book is intended as a textbook for technical
higher educational institutions in computer mathematics and prob-
ability theory. It consists of an introduction -- in which the main
definitions, terms, and symbols used in the theory of approximation
calculation are explained -- and three parts. The first of these
deals with basic methods of numerical analysis, the second -- with
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USSR

GUTER, R. S., et al, Elementy Chislennogo Analiza i Matematicheskoj Obrabotki Rezultatov Cpyta, "Nauka," 1970, 432 pp, ill., 79 kopecks

probability theory (at the level of these educational institutions), and the third -- with methods of mathematical treatment of observational results. The following problems are examined: numerical solution of equations and systems, interpolation, approximation integration (formulas of numerical integration), approximation integration of differential equations, events and probability, random variables, error theory, least-squares methods, and representation of observational data as equations (empirical formulas). Tables: 106. Illustrations: 66.

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. USSR

UDC 551.511

GUTERMAN, I. G.

"Average and Turbulent Transfer of Substances Over the USSR"

Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. min. SSSR (Works of the Institute of Experimental Meteorology. Main Administration of the Hydrometeorological Service Affiliated With the Council of Ministers of the USSR), 1971, vyp. 21, pp 47-62 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10B754)

Translation: The author considers the proportion of average and turbulent horizontal fluxes of substances on the edge of the boundary layer of the atmosphere (1.5 km) in January and July above the territory of the USSR. It is shown that the intensity of macroturbulent pulsations, which is characterized by the vector mean-square deviations of the winds σ_v to the modulus of the resultant wind, comes to 100-500 percent in the winter, and 200-2000 percent in the summer. This is chiefly the result of a reduction in the average transfer, since the macroturbulent motion component of σ_v is of the same order of magnitude summer and winter.

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USSR

GUTERMAN, I. G., Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. min. SSSR, 1971, vyp. 21, pp 47-62

In January, turbulent heat fluxes reach barely 1-3 percent more than the fluxes due to average motions, while the ratio in July increases to 4-7 percent. Thus the practically horizontal heat fluxes on this level can be computed from data on the average temperature and the resultant wind. The stream lines of turbulent heat fluxes coincide with the direction of the temperature gradient, and in January as well as July over the territory of the USSR, most of them run either opposite or at right angles to the stream lines plotted from the average vector of the wind speed, with the result that the total heat fluxes are vectorially somewhat less than the average heat fluxes.

The horizontal turbulent fluxes of moisture make an appreciable contribution to the overall flux of moisture as compared with the turbulent heat fluxes. At the 1.5 km level, the ratio of turbulent moisture flux to the amount of moisture transferred by average motion fluctuates over a range of 20-180 percent in January, and 40-140 percent in July. Within the limits of a single season, the regions of high and low turbulence of fluxes of the three substances considered over the USSR approximately

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USSR

GUTERMAN, I. G., Tr. In-t eksperim. meteorol. Gl. upr. gidrometeorol. sluzhby pri Sov. min. SSSR, 1971, vyp. 21, pp 47-62

coincide, although the average annual amplitude of the variation is different for different substances.

The direction of turbulent flows of moisture coincides closely with the direction of horizontal gradients of the average absolute moisture content. Regions are isolated on the territory of the USSR where turbulent fluxes of moisture are added to the average moisture flux, as well as regions where the total fluxes of moisture are sharply attenuated due to oppositely directed fluxes of both types. Bibliography of 13 titles. Author's abstract.

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Acc. Nr: **AT0043976**

Ref. Code: **VR0000**

PRIMARY SOURCE: **Geofizicheskiy Sbornik, Kiev, 1970, Nr 33,**
PP 64-70

**ON THE DEFORMED STATE OF THE ELASTIC MODEL
OF THE EARTH'S CRUST INNER LAYER**

V. G. Gutermak

(Institute of Geophysics, Academy of Sciences, Ukrainian SSR)

Summary

Simple expressions are suggested for describing the deformed state of the Earth's crust inner layer at given displacements on its boundaries. The character of the displacements corresponds to the geometry of the main seismic boundaries of the Earth's crust structures detected by the method of deep seismic sounding. A numerical example is considered for the structure with the obsequents relief of the upper and lower boundaries of the layer. The obtained regularities of the displacement and stress fields can be used in geological tectonic analysis of corresponding structures of the Earth's crust.

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172 014 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ON PHASE TRANSITIONS IN THE EARTH'S MANTLE AS THE CAUSE OF
TECTOGENESIS WITH ENGLISH SUMM -U-
AUTHOR--GUTERMAN, V.G.

COUNTRY OF INFO--USSR

SOURCE--AKAD. NAUK UKRAIN. SSR GEOFIZ. SBORNIK, NO. 30, P. 75-80 ILLUS.

1969

DATE PUBLISHED-----69

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--STRUCTURAL GEOLOGY, UPPER MANTLE, GEOLOGIC FAULT, TECTONIC
MOVEMENT, PHASE TRANSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3002/0311

STEP NO--UR/0000/69/000/030/0075/0080

CIRC ACCESSION NO--AT0127892

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0127892

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A QUALITATIVE SCHEME IS PROPOSED FOR THE FORMATION OF GEOLOGIC STRUCTURES ON THE SCALE OF PLATFORM BASINS AND GEOSYNCLINES, BASED ON THE IDEA OF PHASE TRANSITIONS IN THE UPPER MANTLE. LOCALIZED SOURCES OF HEAT ENERGY IN THE MANTLE AND TWO THERMODYNAMICALLY UNSTABLE LAYERS IN WHICH ARE LOCATED THE PHASE TRANSITION CENTERS ARE POSTULATED. TWO SYSTEMS OF PHASE TRANSITION CENTERS ARE POSSIBLE, DEPENDING ON WHETHER THE HEAT SOURCES ARE NEARER THE UPPER OR THE LOWER UNSTABLE LAYER. THE FIRST SYSTEM IS RESPONSIBLE FOR THE FORMATION OF PLATFORM TYPE DEPRESSIONS, THE SECOND FOR GEOSYNCLINES. THE ROLE OF ABYSSAL FAULTS IN CHANGING THE SIGN OF VERTICAL DISPLACEMENTS OF THE EARTH'S SURFACE IS POINTED OUT.

UNCLASSIFIED

USSR

UDC 627.825:699.84.001.57

GUTIDZE, P. A., Candidate of Technical Sciences

"Model Study of Seismic Strength of the Concrete Arch Dam of the Chirkeysk Hydroelectric Power Station"

Gidrotekhnicheskoye Stroyitel'stvo, No 11, 1971, pp 9-12.

ABSTRACT: The high arch dam of the Chirkeysk Hydroelectric Power Station is being constructed in a narrow gap in a region of high seismic activity. The dam is 228 meters high, the length along the chord is 275 m. This article presents the results of model studies establishing the dynamic characteristics and seismic stressed state of the dam, corresponding to a design seismic activity level of 8 units. The model method used allowed 8 periods and forms of natural oscillations to be established. These data, together with these logarithmic decrement of natural oscillations, are quite sufficient to determine the seismic inertial loading on the basis of contemporary theories. Tests of a mechanical model of the dam on a seismic platform established that the maximum normal stresses in the body of the dam will be 9.42 kg/cm² in the arch direction and 6.25 kg/cm² in the "cantilever" direction. These stresses fall within the limits of the norms. Seismic stresses were soon to be applied in the most unfavorable direction, at an angle of 45°.

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1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--STUDYING THE DEPENDENCE OF THE WEAR RESISTANCE OF CYLINDER SLEEVES
ON THE MICRORELIEF OF THE WORKING SURFACE -U-
AUTHOR-(04)-SHNEYDER, YU.G., LEBEDINSKIY, G.G., BUNGA, G.A., GUTIN, M.YE.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, AVTOMOBIL'NAYA PROMYSHLENNOST', NO 2, 1970, PP 41-42
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--METAL ROLLING, BIBLIOGRAPHY, VIBRATION EFFECT, WEAR
RESISTANCE, METAL MICROSTRUCTURE/(U)M412 ENGINE CYLINDER SLEEVE
CENTRL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/1215 STEP NO--UR/0113/70/000/002/0041/0042
CIRC ACCESSION NO--AP0123179
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123179

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS OF AN EXPERIMENTAL COMPARATIVE STUDY OF THE WEAR RESISTANCE OF THE M-412 ENGINE CYLINDER SLEEVES AS A FUNCTION OF THE MICRORELIEF OF THEIR WORKING SURFACES ARE PRESENTED. A PROCEDURE IS GIVEN FOR THE ANALYTIC CALCULATION OF REGULAR MICRORELIEF PRODUCED BY THE VIBRATION ROLLING METHOD.

UNCLASSIFIED

USSR

UDC 621.317.74.089.6

GUTINA, E. M.

"Standard Coaxial Lines and Their Use for Improving the Accuracy of Measuring the Complex Coefficient of Reflection of Loads"

Tr. Sib. NII metrol. (Works of the Siberian Scientific Research Institute of Metrology), 1971, vyp. 8, pp 52-62 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7A200)

Translation: The paper deals with the real possibility of creating standard lines with the use of Soviet coaxial channels with standard binding dimensions of the polar connectors. An evaluation of the error is presented for measurement of the modulus and phase of the coefficient of reflection of the terminal devices as compared with the standard line. Resumé.

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USSR

UDC: 621.317.023

PETROV. V. P., GUTINA, E. M., KONDAKOV, Yu. V.

"Basic Trends in the Development of Techniques for Measuring Circuit Parameters on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 52-57 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A368)

Translation: The advancing development of measurement technology demands a sharp increase in the informational capacity of instruments, as well as improvement in existing methods of measurement and development of new ones. It is noted that the technical revolution in radio electronics accompanied by microminiaturization, the use of hybrid and integrated circuitry, etc. has been reflected to a great degree on the level of measurement technology in the microwave band as well. Among the new and promising trends, works may be singled out on improvement of panoramic methods of determining the characteristics of microwave modules over a broad frequency range, and also works involved with the further development of single-frequency methods, as

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PETROV, V. P., et al., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. iznreniyam. T. 2, 1970, pp 52-57

well as works on the latest methods based on FM and pulse reflectometry in time and frequency regions. Some other areas of development are also examined. Bibliography of 17 titles. E. L.

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USSR

UDC: 621.315.592

GUTKIN, A. A., LEBEDEV, A. A., TALALAKIN, G. N., and SHAPOSHNIKOVA, T. A.,
Physicotechnical Institute imeni Ioffe, Acad. Sci. USSR, Leningrad

"Photoconductivity of Semi-Insulator GaAs Doped With Cr in Strong
Electric Fields"

Leningrad, Fizika i tekhnika poluprovodnikov, vol 6, No 6, 1972,
pp 1067-1071

Abstract: This paper discusses the N-shaped volt-ampere characteristics of high-resistance GaAs alloyed with chromium and their accompanying spontaneous low-frequency current oscillations. The experiments of this research involved the measurement of photoconductivity with the Q-1 monochromator using an SiO₂ prism with unmodulated illumination from the KIM-12-100 incandescent lamp. The GaAs specimens were prepared by the Chokhral'skiy method, with a resistivity of 10^6 - 10^8 ohm-cm at room temperature; their contacts were obtained by melting an In-Au alloy at 400° C. The photoconductivity spectral distribution obtained for various electric field intensities is plotted. The authors express gratitude to D. N. Nasledov and N. M. Kolchanov for their useful comments.

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1/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--EFFECT OF AN ELECTRIC FIELD IN THE SPACE CHARGE LAYER ON THE
PHOTOSENSITIVITY OF A GOLD N GALLIUM ARSENIDE CONTACT NEAR THE
AUTHOR--(02)-GUTKIN, A.A., DMITRIYEV, M.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 282-6

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ELECTRIC FIELD, PHOTOSENSITIVITY, GOLD, GALLIUM ARSENIDE,
PHOTON, SPACE CHARGE, INDIUM, ETCHED CRYSTAL, METAL FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1867

STEP NO--UR/0449/70/004/002/0282/0286

CIRC ACCESSION NO--AP0118831

UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0118831

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONDITIONS ARE DETD. UNDER THE PHOTOCURRENT CHANGES ARE PROPORTIONAL TO THE ABSORPTION CHANGES IN THE SPACE CHARGE LAYER OF PHOTONS WITH AN ENERGY OF SIMILAR TO 1.8 EV. THE CONDITIONS ARE LARGELY SATISFIED BY N-GAAS SAMPLES WITH A CARRIER D. OF 10^{17} CM⁻³ PRIME3 AND A MOBILITY OF 2800-3800 CM²/V SEC. OHMIC CONTACTS WERE PREPD. BY ALLOYING IN IN A H ATM. AT 500DEGREESC FOR 2 MIN. AFTER ETCHING THE CRYSTAL A SEMITRANSSPARENT AU FILM (100-200 ANGSTROM THICK) WAS VACUUM EVAPD (5 TIMES 10^{-6} PRIME NEGATIVES MM HG) UPON THE SIDE OPPOSITE TO THE CONTACT. ALL MEASUREMENTS WERE CARRIED OUT AT SIMILAR TO 80DEGREESC. THE CAPACITANCE VOLTAGE CURVE IS NOT THAT OF A SCHOTTKY TYPE BARRIER. THE MAX. THICKNESS OF THE SPACE CHARGE LAYER IS (2.5-4) TIMES 10^{-6} CM. THE DIFFUSION LENGTH OF HOLES IS (2-8) TIMES 10^{-6} CM. THE RELATIVE PHOTOSENSITIVITY SPECTRA AT VARIOUS BIAS POTENTIALS SHOW THAT THE CHANGES IN THE SPACE CHARGE LAYER ARE ASSOC'D. WITH THE INCREASE OF THE PHOTOCURRENT WITH THE NEG. BIAS POTENTIAL. THE SPECTRA REVEAL A MIN. AND A MAX. WHICH CANNOT BE EXPLAINED BY CHANGES IN THE SPACE CHARGE LAYER THICKNESS BUT ARE RELATED TO VARIATIONS IN THE ABSORPTION COEFF. (FRANZ-KELDISH EFFECT). THE NALA. OF EXPTL. DATA YIELDS THE ELEC. FIELD DEPENDENCE OF THE ABSORPTION OSCILLATION PERIOD, WHICH TURNS OUT TO BE IN GOOD AGREEMENT WITH THEORETICAL EXPECTATIONS. FACILITY: FIZ.-TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

USSR

VOLKOV, A. S., GUTKIN, A. A., IL'MENKOV, G. V., NOVAK, I. I., Physico-technical Institute imeni A. F. Ioffe, USSR Academy of Sciences, Leningrad

"Quantum Yield of the Photoconductive Effect in Germanium"

Leningrad, Fizika Tverdogo Tela, Vol 15, No 9, Sep 73, pp 2796-2797

Abstract: To explain the contradictions in previous experimental data on the quantum yield of the photoconductive effect in germanium, the authors investigate the spectrum for this semiconductor at room temperature in the photon energy region of 1-1.9 ev. The results show that within limits of experimental error of $\pm 3\%$ the quantum yield of the photoconductive effect of germanium in this energy region remains constant. The authors thank A. N. Imenkov, D. N. Nasledov, A. A. Pogachev, and B. V. Tsarenkov for taking part in discussion of the experimental results.

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USSR

UDC: 621.315.592

GUTKIN, A. A., LEBEDEV, A. A., RADU, R. K., TALMANIN, G. N., and
SHAPOSHNIKOVA, T. A.

"Investigating the Spectra of Photoionization Cross Sections in
GaAs Alloyed with Cr, Using the Photocapacitive Effect in Structures with a Potential Barrier"

Leningrad, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1954-1960

Abstract: The purpose of this paper is to investigate the photocapacities in GaAs structures alloyed with Cr, and thereby obtain photoionization cross section spectra of deep centers. This idea is based on theoretical work published in earlier papers regarding an impurity photoeffect in the space-charge layer of a p-n junction and its connection with the parameters of impurity centers. Using the results of this theoretical work, the authors qualitatively explain the absorption spectra characteristic of the three types of specimens investigated. These are: surface-barrier diodes obtained by chemical precipitation of gold on n-type GaAs alloyed with Cr; p-i-n GaAs diodes obtained by successive diffusion of chromium and zinc in n-type GaAs; p-i-n GaAs diodes obtained by optical

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USSR

UDC: 621.315.592

GUTKIN, A. A., et al, Fizika i tekhnika poluprovodnikov, No 10, 1972, pp 1954-1960

growth of i and n layers of GaAs with a Cr additive on a p-type GaAs substrate. The kinetics of the change in the barrier capacitance of the structures under the action of mixed lighting in the photon energy region of 0.55-1.3 eV is also investigated. The authors thank D. N. Maslakov for his interest in the work, and M. B. Kagan and B. A. Kholov for supplying the specimens.

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USSR

UDC: 621.472:621.383

GUTKIN, A. A., DMITRIYEV, M. V., and SMYSLOV, Yu. N.

"Optical Constants of a Gold Film and Light Transmission Coefficient of a Semiconductor for Au-GaAs and Au-GaP Photoconverters in the 254-644 nm Wavelength Range"

Tashkent, Geliotekhnika, No 1, 1972, pp 19-24

Abstract: To fill out what the authors, associated with the A. F. Ioffe Physico-Technical Institute, regard as incomplete experimental data of the effective optical constants of gold films obtained through sputtering in a vacuum, the present article determines the constants. It computes the index of refraction, the absorption factor, and the effective thickness of the films from experimental data of the transmission factor and reflection coefficient of the thin gold film on a quartz substrate, under visible and ultraviolet light. The film thickness amounted to 8-40 nm. Results of this experimentation, made with an error factor of no more than 5%, agreed closely with the results of earlier data obtained in the spectral range of 253.6-643.8 nm by R. Philip (J. Phys. Radium, 20, 535, 1959). With the values of the factors obtained by the authors, they computed the light transmission factor of Au-GaAs and Au-GaP surface barrier photoelements.

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USSR

UDC 621.382.2

GUTKIN, A. A., KAGAN, M. B., LEBEDEV, A. A., KHOLEV, B. A., SHAPOSHNIKOVA, T. A.

"Nonadditive Photoeffect During Combined Excitation in GaAs p-i-n-Structures"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 237-241

Abstract: Results are presented from studying the photoeffect during combined excitation in p-i-n-structures of GaAs alloyed with Cr. Light from the admixture and the characteristic absorption bands was used at room temperature. The study revealed mutual signal amplification. With constant illumination, the relative increase in the photocurrent $I_k/I_{ad} + I_{char}$ reaches 10, and with modulation of one of the light fluxes, the variable signal component can increase by 190 times and more. The effect is observed for $\hbar\omega \geq 0.7$ electron volts. In the admixture region the photocurrent depends linearly on the illumination, and in the characteristic region it depends superlinearly. During combined excitation, the lux-ampere characteristic is sublinear. A qualitative model was investigated which explains the observed amplification of the photoresponse by an increase in the effective lifetime in the quasineutral region with illumination of the diode by admixture light. The experimental results agree well with the proposed model. The amplification of the photoresponse is not specific to the given diodes, but it is possible if the width of the

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USSR

GUTKIN, A. A., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 237-241

quasineutral regions between the illuminated surface and the volumetric charge surface is greater than L_p (the length of the diffusion shift of the minority current carriers).

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USSR

UDC 621.382.2

GUTKIN, A. A., NASLEDOV, D. N., FARADZHEV, F. E.

"Polarization Effects in the Presence of Electroabsorption in GaAs p-si-n-Structures"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 393-396

Abstract: The polarization dependence of electroabsorption in gallium arsenide was investigated in the direction of propagation of light both perpendicular to an electric field and parallel to it. The polarization effects detected in the latter case (when the angle between the polarization vector and the electric field is constant) are wholly connected with the anisotropy of the energy bands. The measurements were taken near the edge of the primary absorption band ($E_g - 0.04 \geq \hbar\omega \geq E_g - 0.15$ electron volts) in fields of $\sim (1-3) \cdot 10^4$ volt.cm⁻¹ at temperatures of ~ 100 and 300° K. The variations of the absorption in a strong electric field were investigated using GaAs p-si-n-structures obtained by successive diffusion of chromium and zinc into unoriented gallium arsenide plates with an electron concentration of $\sim 10^{17}$ cm⁻³. Figures are presented showing the ratio of the transmission variations for the direction of the electric vector of the light wave parallel to the electric field in the sample and perpendicular to it, the dependence of $\Delta I/I_0$ on the angle between the plane of

1/2

USSR

GUTKIN, A. A., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 393-396

polarization of the light and an arbitrarily selected direction in the crystal on propagation of the light along the electric field into a high-resistance layer (that is, with mutual perpendicularity of the electric vector of the light wave and the field). In the latter case, there is a position of the polarization plane for which the electroabsorption is minimal. This effect was observed in all identically cut samples at temperatures of ~ 100 and 300°K , and its cause is interpreted as anisotropy of the band structure of the gallium arsenide.

The dependence of the degree of polarization of the electroabsorption on $h\nu$ is determined by the variation of the relative contribution to the electroabsorption of light and heavy holes giving a different degree of polarization [L. V. Keldysh, et al., FTP, No 3, 1042, 1969]. This dependence ceases to be observed if the variation of the absorption coefficients with the participation of light and heavy holes with photon energy varies in the same manner. It is shown in the investigated models that this takes place for $h\nu$ where the absorption edge in the field for light holes becomes similar to the edge in the absence of the field but shifted toward the lower photon energies.

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1/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--PN JUNCTIONS IN GALLIUM ARSENIDE PREPARED BY SULFUR DIFFUSION -U-

AUTHOR-(03)-GUTKIN, A.A., NASLEDOV, D.N., SEDOV, V.E.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 23-8

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SEMICONDUCTOR MATERIAL, GALLIUM ARSENIDE PN JUNCTION, SULFUR,
PHYSICAL DIFFUSION, ZINC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1983/1003

STEP NO--UR/0449/70/004/001/0023/0028

CIRC ACCESSION NO--AP0053923

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0053923

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. JUNCTIONS WERE PREPD. BY DIFFUSION OF S INTO P TYPE GAAS DOPED WITH ZN. THE PROPERTIES OF TYPICAL SPECIMENS OBTAINED AT (A) 800DEGREES FOR 1 HR AND (B) 1000DEGREES FOR 30 HR ARE INDICATED. UNDER THESE CONDITIONS, THE N TYPE LAYERS WERE APPROX. 0.5 AND 12 MU THICK, RESP. THE SPECTRA OF THE B SPECIMENS, PREVIOUSLY ETCHED TO DECREASE RECOMBINATION CLOSE TO THE SURFACE, EXHIBITED SHARP MAX. ASSOCD. WITH THE CONSIDERABLE THICKNESS OF THE FRONT LAYER. THE DIFFUSION LENGTH OF THE HOLES WAS APPROX. 2.5 MU. THE SPECTRA OF A SPECIMENS, IN WHICH THE N TYPE REGION WAS APPROX. 0.5 MU THICK, EXHIBITED A CONSIDERABLE DROP IN THE SHORT WAVELENGTH REGION, WHICH SHOWED SCARCELY ANY DECREASE AFTER REMOVING APPROX. 0.1 MU FROM THE SURFACE BY ETCHING. THIS INDICATES THE EXISTENCE OF A SURFACE LAYER CONTG. MINORITY CURRENT CARRIERS OF SHORT LIFETIME, THESE BEING EVIDENTLY ASSOCD. WITH A HIGH CONCN. OF DEFECTS. THE SPECTRAL CHARACTERISTICS OF A AND B SPECIMENS IN THE IMPURITY REGION WERE SIMILAR TO THOSE FOUND PREVIOUSLY (A. A. GUTKIN, ET AL., 1969), AND WERE ALMOST IDENTICAL. INVESTIGATION OF THE DIFFERENTIAL CAPACITANCE AS A FUNCTION OF VOLTAGE AT 393 AND 770DEGREESK AND 0.47-200 KHZ SHOWED THE SPECIMENS TO BE P-PO-N JUNCTIONS. THE PO LAYER IS FORMED AS A RESULT OF THE COMPENSATION OF SMALL DONORS BY DEEP ACCEPTORS, THE PRESENCE OF WHICH HAS BEEN OBSD. PREVIOUSLY.

UNCLASSIFIED

BUTKIN, A.M.

Lunar geology

PROBLEMS OF LUNAR GEOLOGY

Edited by A. V. Peyve

Translation of "Problemy Geologii Lunny."
"Nauka" Press, Moscow, 1969

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
For sale by the National Technical Information Service, Springfield, Virginia 22161
\$0.00

January 1973

NASA TT F-680

ANCIENT SEAS OF THE MOON

A. L. Sukhanov

ABSTRACT. Research on lunar maria performed by American and Russian scientists is discussed. The discussion begins with the analysis of J. E. Spurr in 1944.

FEATURES OF LAVA-SHEET FORMATION ON THE MOON

A. A. Galkin, Ye. N. Rybick, Ye. V. Sionitskaya,
A. N. G. Sushkin, and A. A. Fozina

ABSTRACT. Observations of volcanic activity on the moon are discussed. The heat losses experienced by the lava due to radiation, convection and other processes are analyzed. Other problems analyzed include hardening of the lava, bubble rising in the melt, and other physical phenomena.

GUTKIN I.V.

Acc. Nr.: AN0104123

Ref. Code: 7UR9003

TITLE-- ANNOUNCEMENT OF THE COMMITTEE ON LENIN AND STATE PRIZES, U.S.S.R. 49

NEWSPAPER-- IZVESTIYA, MAY 28, 1970, P 4, COLS 1-5

ABSTRACT-- NINETY ONE BASIC AND APPLIED RESEARCH WORKS HAVE BEEN NOMINATED FOR THE STATE PRIZES. TWO OF THESE, "THE MULTI-PURPOSE INDUSTRIAL HELICOPTER KA-26", BY N. I. KAMOV, V. B. ALPEROVICH, V. B. BARSHEVSKIY, A. A. DMITRIYEV, G. I. IOFFE, M. A. KUPFER, L. A. POTASHNIK, N. N. PRIOROV, A. G. SATAROV, I. M. VEDENEYEV, S. B. BREN, AND V. A. NAZAROV, AND "THE DEVELOPMENT OF TURBOFAN JET ENGINES NK-8 AND NK-8-4, AND THE DEVELOPMENT AND REDUCTION TO SERIAL PRODUCTION A SYSTEM OF TECHNOLOGICAL PROCESSES WHICH ASSURED WIDE USES FOR TITANIUM ALLOYS", BY N. D. KUZNETSOV, M. T. VASILISHIN, V. A. KURGANOV, P. M. MARKIN, V. D. RADCHENKO, P. A. SUKHOV, A. A. MUKHIN, V. G. SHITOV, G. I. MUSHENKO, L. A. SHKODO, AND G. P. DOLGOLENKO, HAVE BEEN SUBMITTED BY THE MINISTRY OF THE AVIATION INDUSTRY.

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Reel/Frame
19870555

Acc. Nr.: AN0104123

"A SERIES OF INVESTIGATIONS INTO THE DYNAMICS OF A BODY WITH FLUID-FILLED CAVITIES", /65-68/, BY N. N. MOISEYEV, A. A. PETROV, V. V. RUMYANTSEV, AND F. L. CHERNOUSKO AND "ULTRA HIGH PRECISION JIG BORING MILLS WITH 1,000 X 1,600 AND 1,400 X 2,240 MM PLATEMS", BY A. I. KIRYANOV, V. G. ABRAMOVICH, I. V. GUTKIN, A. S. ALIMPYEV, G. B. PAUKOV, AND A. S. YEGUDKIN, HAVE BEEN SUBMITTED BY THE COMPUTATION CENTER OF THE ACADEMY OF SCIENCES AND THE MINISTRY OF THE MACHINE TOOL CONSTRUCTION AND TOOL INDUSTRY, RESPECTIVELY.

"THE RADICALLY IMPROVED MELTING TECHNOLOGY OF CRITICAL-PURPOSE HIGH-ALLOY STEELS AND ALLOYS OF IMPROVED QUALITY ACHIEVED BY THE INERT GAS TREATMENT OUTSIDE THE FURNACE", BY YU. V. GERASIMOV, O. M. CHEKHOMOV, N. V. SIDOROV, S. K. FILATOV, B. A. CHEREMNYKH, R. M. KHAYRUTDINOV, I. P. BARMOTIN, L. K. KOSYREV, K. P. BAKANOV, N. N. VLASOV, P. I. MELIKHOV, AND N. A. TULIN, HAS BEEN SUBMITTED BY THE ZLATOUST METALLURGICAL PLANT.

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Reel/Frame19870556

KZ

1/2 012
UNCLASSIFIED
TITLE--NOISE DISPERSION AT THE OUTPUT OF A MATCHED LINEAR FILTER -U-
AUTHOR--GUTIN, L.S.
COUNTRY OF INFO--USSR
SOURCE--KIEV, IZVESTIYA VUZOV SSSR-RADIOELEKTRONIKA, VOL 13, NO 2, 1970,
PP 274-278
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--ELECTRIC FILTER, ELECTROMAGNETIC NOISE, RC CIRCUIT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1991/0350
CIRC ACCESSION NO--AP0110238
STEP NO--UR/0452/70/013/002/0274/0275
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110238

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MATCHED FILTER IS DEFINED AS A LINEAR FILTER WITH A COMPLEX TRANSFER FACTOR. THE PURPOSE OF THIS PAPER IS TO FIND A LAW FOR THE DISPERSION OF THE NOISE VOLTAGE AT THE OUTPUT OF SUCH A FILTER IN THE STEADY STATE. KNOWLEDGE OF THIS LAW, IT IS ASSERTED, IS SUEFUL IN CLARIFYING CERTAIN PECULIARITIES IN THE APPLICATION OF MATCHED FILTERS AND IN ESTIMATING THE EFFECT OF DEVIATIONS FROM ACCURATE MATCHING CONDITIONS. IT IS ALSO USEFUL IN THE ANALYSIS OF MATCHED FILTER OPERATION IN THE CIRCUIT OF AN OPTIMAL SIGNAL DETECTOR. IN CALCULATIONS MADE OF AN RC INTEGRATING FILTER NETWORK OPERATING ON A SQUARE PULSE SIGNAL, IT IS FOUND THAT THE FILTER IS CLOSE TO AN OPTIMAL MATCHED FILTER. THE AUTHOR STATES, IN CONCLUSION, THAT THE CLOSER THE FILTER TO OPTIMAL, THE LESS ITS GAIN FOR ONE CRITERION OF SIGNAL TO NOISE RATIO AS OPPOSED TO ANOTHER.

UNCLASSIFIED

Devices

USSR

GUTKIN, L. S. 6

UDC 621.391

"Noise Dispersion at the Output of a Matched Linear Filter"

Kiev, Izvestiya Vuzov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 274-278

Abstract: A matched filter is defined as a linear filter with a complex transfer factor. The purpose of this paper is to find a law for the dispersion of the noise voltage at the output of such a filter in the steady state. Knowledge of this law, it is asserted, is useful in clarifying certain peculiarities in the application of matched filters and in estimating the effect of deviations from accurate matching conditions. It is also useful in the analysis of matched filter operation in the circuit of an optimal signal detector. In calculations made of an RC integrating filter network operating on a square-pulse signal, it is found that the filter is close to an optimal matched filter. The author states, in conclusion, that the closer the filter to optimal, the less its gain for one criterion of signal to noise ratio as opposed to another.

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USSR

UDC: 62.505.5

GUTKIN, L. S., Active Member of the Scientific and Technical Society of Radio Engineering, Electronics and Communications

"Problems of Optimizing Radio Systems"

Moscow, Radiotekhnika, Vol. 26, No 5, May 71, pp 21-29

Abstract: The article is a review of the basic problems of optimizing radio systems and radio devices with respect to a complex of quality indices (including economic and design factors) as well as with respect to separate indices (resistance to interference, precision, reliability, etc.).

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- 31 -

USSR

UDC: 621.391.72.061

GUTKIN, L. S.

"Possibilities of Using Signal Structural Peculiarities in the Design of Radio Instruments and Systems"

Moscow, Radiotekhnika, Vol. 25, No. 11, 1970, pp 10-15

Abstract: According to the author, an article such as this is needed in this relatively new field of using the structural peculiarities of signals for radio design since the possibilities of the theory have been insufficiently stressed. In pointing out these possibilities, he also indicates certain inaccuracies and irregularities perpetrated by some of the participants in the controversy this theory has aroused. He begins with an explanation of the idea, subdividing the signal peculiarities into two classes, circuit and structural. The first is defined as those peculiarities which can be expressed through functions of time, the derivatives and integrals of these functions, and new functions into which these can be converted. The second refers to peculiarities expressed through the connection between the functions of time, their derivatives and integrals, and their transformations. The author concludes that this idea is productive and deserves attention, but cautions that design methods according to these two classes should be more clearly contrasted, especially with regard to their potentialities.

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Acc. Nr: **AP0040312**

Ref. Code: *UR0481*

PRIMARY SOURCE: Eksperimental'naya Khirurgiya i Anesteziologiya,
1970, Nr / , PP 3-10

ON THE STATE AND PERSPECTIVES IN DEVELOPMENT OF CRYOSURGERY

Sirotkina, M. G.; Gol'dina, B. G.; Gutkin, V. S.;
Komarov, B. A.; Kondrat'yeva, N. I.; Mikhaloyts, S. N.;
Rudnya, P. G.

The trends of development and practical evaluation of cryosurgical methods of treatment in the last two decades are presented. Their use being of pure empiric nature it has been decided to use canine palatine tonsils as a suitable model for scientific optimization of demands applied to cryosurgical apparatuses and rationalization of their application. The dynamics of general and local changes after tonsillectomy in the fluid nitrogen (-196°C) as a cold source have been studied by clinical, haematological and pathomorphological investigations. By lowering the temperature in the tissue under tonsil to -7°C a subsequent expressed destructive effect can be anticipated. Complete disappearance of the tonsil tissue was observed in 51.8 per cent of cases, partial destruction—in 35.1 per cent. The authors believe that along with an intensive biological search for complex evaluation of the method a simple cryogen technique for a number of surgical fields to be equipped with must be developed.

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REEL/FRA
19741743

02. bc

USSR

UDC 615.832.97/.98

SIROTKINA, M. G., GOL'DINA, B. G., GUTKIN, V. S., KOMAROV, B. A.,
KONDRAT'YEVA, N. I., MIKHALOYTS, S. N., and RUDNYA, P. G., All Union
Scientific Research Institute of Surgical Apparatus and Instruments,
Ministry of Health USSR

"Status of and Prospects for Development of Cryosurgery"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 1,
1970, pp 3-10

Abstract: The development of cryosurgery during the past 20 years has been purely empirical. A variety of cooling agents, degrees of cooling, times of exposure, cycles of freezing and complexity of apparatus have been used for the same purposes. Thus, while the results have been encouraging in a number of specialties (dermatology, ophthalmology, gynecology, urology, and some others), many questions remain. What is needed now is a thorough study of the anatomical and physiological characteristics of the organs to be treated and the effects of exposure to cold, as well as a scientific determination of the optimum parameters of cryosurgical instruments and the most efficient way of using them. As a model for such studies, the authors describe

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USSR

SIROTKINA, M. G., et al., Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 1, 1970, pp 3-10

the results immediate and long-term, of experiments on dogs whose tonsils were destroyed with a specially constructed cryoapplicator using liquid nitrogen (-196° C).

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1/2 010 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--UPPER TRIASSIC BUAXITES AND LATERITES OF THE EASTERN SLOPES OF THE
SOUTHERN URALS -U-
AUTHOR-(02)-GUTKIN, YE.S., BEREZNITSKAYA, R.YA.
COUNTRY OF INFO--USSR
SOURCE--SOV. GEOL. 1970 13(1) 48-61
DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--BAUXITE, GEOCHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0310 STEP NO--UR/0215/70/013/001/0048/0061

CIRC ACCESSION NO--AP0113240
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0113240

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE BAUXITES WERE FORMED BY REDEPOSITION OF A LATERITE WEATHERING PROFILE. THE LATERITES AND RESIDUAL ALLITES WERE PRESERVED PREDOMINANTLY IN THE AREA OF THOSE TECTONIC BLOCKS WHICH WERE NOT UPLIFTED. URAL BAUXITES AND LATERITES HAVE SIMILAR COMPS. THE X RAY DIFFRACTION PATTERNS OF SAMPLES, TAKEN FROM THE WEATHERING PROFILE ON DIABASES, HAVE INTENSE LINES OF KAOLINITE AND GIBBSITE. GIBBSITE, KAOLINITE, AND MONTMORILLONITE WERE DETECTED IN X RAY DIFFRACTION PATTERN OF ALLITE SAMPLES ACCORDING TO THE SET OF LINES OF DIFFERENT INTENSITIES. THE CLASTIC MATERIAL, DELIVERED INTO THE SEDIMENTATION BASIS WAS FORMED BY EROSION OF LOCAL VOLCANIC SEDIMENTARY ROCKS AND WEATHERING PROFILES. THE EROSION PRODUCTS WERE TRANSPORTED A SHORT DISTANCE. THIS IS SUBSTANTIATED BY COMPN. OF CLASTIC ROCKS AND RELATIVELY LOW DEGREE OF GRAIN ROUNDING. THEREFORE, BOTH SEDIMENTARY BAUXITES AND ALLITE OF TRIASSIC AGE, AND LATERITES OF THE SAME AGE, ARE NOW KNOWN IN THE SOUTHERN URALS. ACCORDING TO THE COMPN., FORMATION CONDITIONS, AND AGE, THE SOUTHERN URAL BAUXITES ARE SIMILAR TO THE LOWER MESOZOIC BAUXITES AND BAUXITE LIKE ROCKS KNOWN IN THE EASTERN SLOPES OF THE NORTHERN URALS. THIS SUGGESTS THAT LATERITES CAN ALSO BE FOUND IN THE NORTHERN URALS.

UNCLASSIFIED

USSR

GUTMAN, A. M., Kaunas Medical Institute

"Interpretation of Profiles of Potentials"

Moscow, Biofizika, Vol 15, No 5, Sep-Oct 70, pp 888-893

Abstract: In the case of localization of synapses in the soma or at basal or apical dendrites of a neuron, the source of an extracellular synaptic field should be regarded as a dipole; in the case of localization of synapses on the shaft of an apical dendrite, it should be regarded as a quadrupole. This quadrupole source, which is usually not taken into consideration in an analysis, makes it possible to explain the profile of waves generated by an EPSP. While a transcortical potential is determined only by the dipole source, the profile of the potential is determined by both the dipole and the quadrupole source. Formulas are derived which relate the potential profile to intracellular potentials.

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- 5 -

Acc. Nr:

AP0051119

Abstracting Service:

CHEMICAL ABST. 5-7c

Ref. Code:

UR0138

GUTMAN A.M.

101596r Effect of the vulcanization of latexes on the biological stability of films obtained from them. Spektor, E. M.; Gutman, A. M.; Kondrat'eva, E. N.; Gusev, M. V. (Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR). *Kauch. Rezina* 1970, 29(1), 15-16 (Russ). S vulcanization of butadiene-styrene SKS-65GP latex (I) produced increased biol. stability and fungicidal properties of I films. Nairit L-7 latex films had higher resistance to molds than I films. Vulcanization of L-7 films also had a favorable effect on their fungus resistance. I and L-7 films inhibited bacterial growth. CKJR I

REEL/FRAME

19811162

USSR

UDC 531.776.088:621.375.826

GUTMAN, G. B., ROLICH, V. I., TIMOFEYEV, V. M., TRET'YAKOV, V. E., and
FILATOV, Yu. V.

"On Exactness Characteristics of a Measuring Annular Laser Transducer of
Angular Speed"

Tr. Metrol. In-tov SSSR [Works of Metrological Institutes USSR], 1972, No
139(199), pp 3-9 (from Referativnyy Zhurnal, No 10, Oct 72. 32. Metrologiya
i Izmeritel'naya Tekhnika. Single Issue. Abstract No 10.32.484)

Translation: The errors of a measuring transducer of angular speed, based
on an annular gas laser, were experimentally investigated. Measurements
were made for different time intervals when stabilizing the emission fre-
quency of the annular laser and without stabilizing. It is demonstrated
that the stabilization of emission frequency significantly increases the
measuring accuracy of angular speed. The exactness characteristics of the
apparatus were determined for different angular speeds when measuring mean
and current values of angular speed. Six illustrations, four bibliographical
references.

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USSR

UDC 77

GINZBURG, K. M., KOLESOVA, T. B., BELYAYEVA, V. A., GUTMAN, I. M.

"Aging of Photographic Papers"

Uspekhi nauchn. fotogr. (Advances in Scientific Photography), 1970, Vol. 14, pp 171-173 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1329)

Translation: The aging kinetics of AgBr-photographic papers of three gradations is compared: normal (No. 3), contrast (No. 4), and high contrast (No. 6). Aging of the normal type was observed for No. 3 and anomalous aging for Nos. 4 and 6 (with a rapid loss of sensitivity for No. 6). These differences are due to technological characteristics: degree of aging, etc. Certain characteristics of the behavior of No. 6 are associated with the presence of rhodium ions introduced to obtain high contrast. The protective layer which only No. 3 has slows down aging but the introduction of benzotriazole has little effect except to accelerate (thermostatic) aging. The latter should be avoided, however, since according to the data of the authors it distorts the nature of processes occurring in ordinary aging and produces a false picture of the tendency in the change

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USSR

GINZBURG, K. M., et al, Uspekhi nauchn. fotogr., 1970, Vol. 14, pp 171-173

of the photographic properties of the papers. Phenomena were observed indicating the course of redistribution aging in emulsion layers of Unibrom papers. Authors abstract.

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1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--RESTORATION OF AUTOMATIC COUPLINGS BY MECHANIZED BUILDING UP -U-
AUTHOR--(03)--VOLFOVSKAYA, F.S., GUTMAN, L.M., EPSHTEYN, S.S.
COUNTRY OF INFO--USSR
SOURCE--AVTOMAT. SVARKA, FEB. 1970, (2), 52-54.
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--METAL SURFACING, WELD FACING, LOCOMOTIVE, RAILWAY ROLLING
STOCK, MECHANICAL COUPLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PRGXY REEL/FRAME--2000/0316

STEP NO--UR/0125/70/000/002/0052/0054

CIRC ACCESSION NO--AP0124075

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0124075

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. AN IMPROVED BUILDING UP TECHNOLOGY FOR RESTORING WORN PARTS OF THE AUTOMATIC COUPLINGS OF RAILWAY WAGONS AND LOCOMOTIVES IS DESCRIBED. THE BUILDING UP PROCESS IS FULLY MECHANIZED; IT IS CARRIED OUT UNDER FLUX OR WITH A POWDER WIRE, WITHOUT ANY SUPPLEMENTARY PROTECTION FROM THE EFFECTS OF THE ATMOSPHERE. A SLIGHT DEGREE OF MECHANICAL FINISHING MAY BE REQUIRED AFTER THE BUILDING UP OPERATION.

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Acc. Nr.:

AP0042541

GUTMAN L. N.

Ref. Code: UR0362

JPRS 58162

Solution of Nonstationary Problems in Mesometeorology

(Abstract: "Nonstationary Problems in Mesometeorology," by L. N. Gutman and V. L. Perov, Computation Center, Siberian Department Academy of Sciences USSR; Moscow, Izvestiya Akademii Nauk SSSR, Fizika Atmosfery i Okeana, Vol VI, No 1, 1970, pp 3-13)

The authors formulate the mesometeorological problem of computing the spatial-temporal distribution of meteorological elements, taking into account the influence of the underlying surface. Processes whose horizontal scales are about 100 km are considered. Mesometeorological equations are derived which contain terms for taking into account the influence of the external pressure and temperature fields. These equations make it possible to formulate problems in mesometeorology as problems without initial conditions when the solution is determined by the "history" of the process. As an illustration of this approach the article gives the formulation of the nonstationary nonlinear problem of the motion of an air mass over complex relief. A numerical solution is given for a simple variant of the problem (the one-layer problem of the motion of air in a curving narrow valley bounded on the sides by high mountain ranges).

Reel/Frame

19760508

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USSR

UDC 621.357.1.035.2:669.781(088.8)

GUTMAN, M. B., KAUFMAN, V. G., GURSKIY, V. F., GORODINSKIY, M. S.,
SHAKHYES, YU. A., KALOSHIN, YU. G., RABIN'KIY, B. YA., and LEZHUYEVA, L. S.

"Apparatus for Electrolytic Boronization"

USSR Author's Certificate Kl. [expansion unknown] C 23 c 9/00 No 337446,
Filed 23 Jan 70, Published 31 May 72 (from Referativnyy Zhurnal -- Khimiya,
No 7, 1973, Abstract No 71431P)

Translation: An apparatus is patented for the electrolytic boronization, composed of a nonmetallic crucible inside of which is located a partition and electrodes. It is distinctive in that in order to increase efficiency the electrodes are arranged in a circular space formed by the cylindrically coaxial arrangement of the crucible and partition filled with the molten salt.

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USSR

UDC 576.858.75.095.383

SOLOV'YEV, V. D., and ~~GUTMAN, N. B.~~, Institute of Epidemiology and Microbiology
imeni N. F. Gamaleya, Academy of Medical Sciences USSR, Moscow

"Characteristics of Hong-Kong Influenza Virus Strains as Interferon Inducers"

Moscow, Voprosy Virusologii, No 6, Nov/Dec 70, pp 652-658

Abstract: Antibody strains were isolated from patients with Hong-Kong influenza during the Moscow epidemic in January and February 1969. Some 46 strains were studied, together with 39 additional strains obtained during the January-February 1970 epidemic. Differences were found among the strains with respect to their ability to induce interferon in mice. Of the 85 strains, 14 from the 1969 epidemic and 10 from the 1970 epidemic were found to be weak interferon-inducers; 29 strains were strong inducers, and 32 intermediate inducers. Three strains with minimum and maximum interferon-inducing activity were studied in greater detail. After 10 subsequent passages on chicken or mice embryos, the differences between interferon-positive and interferon-negative strains gradually disappeared. It is suggested that these differences in interferon-inducing ability among the virus strains are of great practical value as a genetic indicator.

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1/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--DISORDERS OF INTRAUTERINE DEVELOPMENT OF MICE UPON INOCULATION OF
PREGNANT FEMALES WITH COXSACKIE VIRUSES -U-
AUTHOR-(03)-SOLOVYEV, V.D., KHESIN, YA.YE., GUTMAN, N.R.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 60-67

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--COXSACKIE B VIRUS, EMBRYOLOGY, MOUSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1986/1943

STEP NO--UR/0402/70/000/001/0060/0067

CIRC ACCESSION NO--AP0103670

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103670

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREGNANT MICE WERE INOCULATED INTRAVENOUSLY WITH LARGE DOSES OF HIGHLY PATHOGENIC STRAINS OF COXSACKIE B3 AND A6 VIRUSES ON THE FIRST 4 TO 10 DAYS OF PREGNANCY. PATHOLOGICAL DEVELOPMENT OF EMBRYOS WAS OBSERVED IN 20 TO 25PERCENT OF THE FEMALES. IN INFECTION WITH COXSACKIE B3 VIRUS ON THE 4 TO 7TH DAYS OF PREGNANCY, THE VIRUS FREQUENTLY AFFECTED THE PLACENTA BUT IN A NUMBER OF CASES INVOLVEMENT OF TISSUES OF THE EMBRYO WAS OBSERVED WITH THE PLACENTA EXTERNALLY APPEARING INTACT. INOCULATION OF THE 7 TO 10TH DAYS OF PREGNANCY WAS NOT ACCOMPANIED BY ANY CHANGES IN THE EMBRYO TISSUE; THE INFECTION WAS MANIFESTED POSTNATALLY. THE VIRUS WAS ISOLATED ONLY FROM 2 OUT OF 60 EMBRYOS EXAMINED. AFTER INOCULATION WITH COXSACKIE A6 VIRUS EARLY IN PREGNANCY NO INVOLVEMENT OF THE EMBRYO WITH INTACT PLACENTA WAS OBSERVED. INOCULATION ON THE 7 TO 10TH DAYS OF PREGNANCY FREQUENTLY RESULTED IN DEVELOPMENT OF CHARACTERISTIC CHANGES IN THE DEVELOPING SKELETAL MUSCLES. IN 13.1PERCENT OF FEMALES MISCARRIAGES AND STILLBIRTHS WERE OBSERVED. IN INFECTIONS WITH BOTH VIRUSES THE TIME OF APPEARANCE OF CHANGES IN EMBRYOS COINCIDED WITH THE TIME OF MAXIMUM ACCUMULATION OF THE VIRUS IN THE BLOOD OF MOTHERS. NEWBORN MICE WERE FOUND INFECTED IN 100PERCENT OF CASES AND DIED ON THE 2 TO 5TH DAYS OF LIFE. A CORRELATION WAS FOUND BETWEEN THE TIME OF APPEARANCE OF ANTIBODY IN THE BLOOD OF MOTHERS, THE PRESENCE OF THE VIRUS IN EMBRYO TISSUES AND THE DEGREE OF AFFECTION OF EMBRYO TISSUES AND FETUSES.

UNCLASSIFIED

Biophysics

USSR

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"A Neuron Network Differentiating Signals by Time and Integrating Them by Space"

Moscow, Biofizika, Vol 16, No 6, Nov/Dec 71, pp 1,074-1,079

Abstract: An outline of a three-layer neuron network in the retina is presented. While the signals induced by a discrete object moving with a certain velocity pass through the successive layers, their amplitude is converted into the logarithm by the neurons in the first layer, their temporal differentiation is performed by the neurons in the second layer facilitating perception of velocity, and their spatial integration is accomplished by the laterally connected neurons in the third layer facilitating perception of the object's shape. Equations are established for evenly and unevenly illuminated stationary and moving objects, and such effects as "invisibility" of a stationary object, its "manifestation" during motion, and the filling of an "empty field" are analyzed.

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GUTMAN, S.R.

Electroencephalography

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Reference: 10, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

"Pulse-Width Modulator for Biopotential Recording of Electroencephalograms"

Electroencephalography and Neurophysiology, "Neuro" Publications
1969, 106, pp 7-12

Abstract: Description of using pulse-width modulator (PWM) method for electroencephalogram (EEG) recording are presented. One of the variants of PWM method, which is described, is connected. A theoretical circuit diagram of the PWM method is presented, which makes possible the recording of the electroencephalogram on a magnetic tape from a biological amplifier. Calculation of the transmission coefficient of the recording channel and the amplitude-frequency characteristics of the arrangement are presented.

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KREIN, I. M., Candidate of Physiological Sciences

"The Possibility of Contact Between Man and Dolphin"

Kiev, Vsesoyuznyi Nauchno-Issledovatskiy TsN, No 6, 1970, pp 92-95

Abstract: The author reviews the two major trends evident in studies on the problem of contact between man and the dolphin. 1. Attempts to select specific signals from dolphin "behavior" with the aid of acoustic analysis and analysis of the signals of the animals by "vision" and 2. Attempts to teach the dolphin human language. The author discusses the approach from the above in that human contact with the dolphin constitutes a special problem of contact between a human and an animal biological type. In an encounter with an animal type, the intelligence problem is how to determine the level of its development. Since the level of highly organized beings is a complex device which can carry out very intricate operations. It is first necessary to select a set of those operations which characterize a lower communication called "thinking" or "intelligence". Human intelligence is taken as the standard. Two conditions are formulated for the selection of operations: necessity and adequacy. To these are added two requirements which must be met for intelligence: they should be independent from the methods of information storage and exchange and should

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Refractory Materials

USSR

UDC 666.764:621.928.37

MARANTS, A. G., GUTMAN, V. I., All-Union Institute of Refractories; FRANTOVA, E. S., ZEGHER, I. Ye., VASILIVITSKIY, A. V., KREYDLIN, P. N., All-Union Scientific Research, Planning, and Design Institute of Metallurgical Machinery; ROMANOVSKIY, E. B., KOREN, L. N., and KOSTYRYA, Yu. P., Dnepropetrovsk Metallurgical Institute

"Prospects of the Application of the Melting Cyclone for the Production of Melted Refractories"

Moscow, Ogneupory, No 5, 1973, pp 50-54

Abstract: The process of cyclone melting was investigated with a view to produce melted refractories of the magnesium-spinel and brazilite-corundum types. Experiments were carried out at the Institute of the Problems of Material Science of the Academy of Sciences UkrSSR. The experiments indicated the possibility of applying melting cyclones with the use of a blast enriched with oxygen for the production of cast fused refractories with a 1800-1900°C fusion temperature in which the melt aggregates in the warming forehearth for aftercasting into molds. The dust removal in cyclone melting does not exceed 5%, thus ensuring the production of a melt which is close to the initial charge in chemical composition. The optimum content of oxygen in the blast at an approximate natural gas consumption of 1.5 m³/kg charge was determined.

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MARANTES, A. G., et al., Ogneupory, No 5, 1973, pp 50-54

The properties of the produced materials are analyzed. Four figures, three tables, three bibliographic references.

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UDC 621.396.662.4.042.15

ROZENBAUM, L. B., GUTNER, B. M.

"Using Magnetic Disaccommodation for Increasing the Tuning Rate of Ferrite Cores"

Moscow, Radiotekhnika, Vol 25, No 8, 1970, pp 98-102

Abstract: In many high-frequency devices, rapid tuning is obtained by magnetizing the ferrites in the oscillatory circuits with a field varying in time according to a particular law. Modern accelerators of charged particles require a tuning rate on the order of 10^3 - 10^4 MHz per second, where the rate of change of the magnetizing field may be as much as 10^4 - 10^5 oersteds per second. While there are various methods for increasing the tuning rate, they are all subject to an upper limit. In this paper, however, the authors propose a method through which this limit is transcended, or, what amounts to the same thing, through which a given tuning rate can be attained at a much lower rate of change of the magnetizing field. The authors discuss experimental results for ferrites of the 35NN type with an initial tuning frequency of 35 MHz and a varying field rate of 50 kiloersteds per second. It is found that the disaccommodation component may lead to a situation in which the tuning velocity at the beginning of a cycle is negative, a situation, moreover, which is true of the 35NN-P ferrite as used in the accelerating synchrotron proton resonators of 76 billion ev in Serpukhov. 1/1

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 ADO, YU. M., ZHURAVLEV, A. A., LOGUNOV, A. A., MYAB, E. A., NAUMOV,
 A. A., PISAREVSKIY, V. YE., ROGOZINSKIY, V. G., TUSHAKEMISHVILI, K.
 Z., SHUKAYLO, I. A., BOYKO, S. N., KOMAR, YE. G., MALYSHEV, I. F.,
 MOZIN, I. V., MONOSZON, N. A., MCZALEVSKIY, I. A., SPEVAKOVA, F. M.,
 STOLOV, A. M., TITOV, V. A., VODOP'YANOV, F. A., KUZ'MIN, A. A., KUZ'-
 MIN, V. F., MINTS, A. L., RUBCHINSKIY, S. M., UVAROV, V. A., GUTNER,
 B. M., ZALMANZON, V. B., PROKOP'YEV, A. I., and TEMKIN, A. S.

"Some Results of the Overall Adjustment and Start-up of the 70-Gev
 Proton Synchrotron of the Institute of High-energy Physics"

Moscow, Atomnaya Energiya, Vol 28, No 2, Feb 70, pp 132-133

Abstract: The physical part of the plan for the 70-Gev proton syn-
 chrotron was executed by the Institute of Theoretical and Experimental
 Physics. The electromagnet with feed system, the vacuum chamber, and
 the injection devices were developed at the Scientific Research Insti-
 tute of Electrophysical Apparatus imeni D. V. Yefremov. The radio-
 electronic systems for acceleration process control and generation of

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the accelerating field, as well as the radiotechnical measurement and beam observation systems, were developed by the Radiotechnical Institute of the Academy of Sciences USSR. "Tyazhpromelektroproyekt" [State Planning Institute for the Planning of Electrical Equipment for Heavy Industry] designed the general-purpose electrotechnical devices and cable connections. The plan for the construction complex of the accelerator was developed by the State All-Union Planning Institute. The construction of the accelerator was under the general supervision of the State Committee for the Use of Atomic Energy USSR. The adjustment of individual systems and the overall adjustment and start-up of the accelerator were carried out by the Institute of High-energy Physics and the developers of the accelerator systems. The basic beam work was done by the Institute of High-energy Physics with the participation of the Radiotechnical Institute. The construction of the accelerator was begun in 1960, and all the basic construction and assembly work was completed at the beginning of

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1967. At the initial stage of construction, before the formation of the Institute of High-energy Physics in 1963, the work was coordinated by the Institute of Theoretical and Experimental Physics. The linear accelerator injector was started on 28 July 1967, the operation of the individual systems was adjusted by September 1967, and the physical start-up of the accelerator was accomplished on 14 October.

A description is given of the work done to adjust the annular electromagnet (including the electromagnet cooling and feed systems), the injection system (consisting of matching channel and injection device), the vacuum system, the radioelectronic system (including the accelerating field generation system, the acceleration process control system, and the radiotechnical measurement system), and the beam observation system (which provides for beam observation in the first revolution and during acceleration). In the physical start-up of the accelerator the main efforts were directed towards obtaining accelerated protons of the planned energy, and the problem of obtaining high

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intensity of the accelerated proton was not raised.

The article gives a listing of the principal parameters of the proton synchrotron, as well as a schedule of the individual stages of the start-up of the accelerator. Photographs include a view of the part of the ring hall in the beam injection area and a general view of the hall of ignitron rectifiers.

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